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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,739	03/09/2004	William L. Bowden	08935-251002	2499
26161	7590	12/06/2004	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			WEINER, LAURA S	
			ART UNIT	PAPER NUMBER

1745

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/796,739	Applicant(s) BOWDEN ET AL.	
	Examiner Laura S Weiner	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-25 is/are pending in the application.
- 4a) Of the above claim(s) 11-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3-9-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 11-23, drawn to a method of preparing lambda-manganese dioxide, classified in class 423, subclass 605.
- II. Claims 24-25, drawn to a method of manufacturing an electrochemical cell, classified in class 29, subclass 623.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a battery comprising a zinc anode and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

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3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Tu Nguyen on November 30, 2004, a provisional election was made without traverse to prosecute the invention of Group II, claims 24-25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by Thackeray et al. (5,316,877).

Thackeray et al. teaches in column 5, line 65 to column 6, line 27, that LiMn_2O_4 can be used as an electrode material for 4 V cells when used over the compositional range $\text{Li}_{1-y}\text{Mn}_2\text{O}_4$. When y is 0, this 4 V cell is effectively in a discharged state. The cell is charged by removing lithium from the LiMn_2O_4 electrode. During charging, lithium is deposited at the anode. At $y=1$, the phase $\lambda\text{-MnO}_2$ would result at the fully oxidized cathode.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 24 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Furukawa et al. (JP 63-187569, abstract).

Furukawa et al. teaches to improve the charge-discharge cycle performance of a nonaqueous secondary battery by using a positive electrode using manganese dioxide having the crystal structure of spinel type, λ type or intermediate type. Furukawa et al. teaches a nonaqueous secondary battery using lithium or lithium alloy as a negative active material and manganese dioxide having the crystal structure of spinel type, λ type or intermediate type for the positive active material.

Since Furukawa et al. teaches the same lithium secondary battery comprising a positive electrode which contains a λ -MnO₂ and a lithium negative electrode then inherently the same lithium secondary battery which contains a λ -MnO₂ cathode and a lithium anode having a closed circuit voltage of about 4V and a specific discharge capacity at a nominal discharge rate of 1 mA/cm² to a 3V cutoff of greater than 120 mAh/g must also be obtained.

In addition, the presently claimed property of a battery having a closed circuit voltage of about 4V and a specific discharge capacity at a nominal discharge rate of 1 mA/cm² to a 3V cutoff of greater than 120 mAh/g would have obviously have been present once the Furukawa et al. product is provided. *In re Best*, 195 USPQ 433 (CCPA 1977).

10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thackeray et al. (5,316,877) or Furukawa et al. (JP 63-187569, abstract) in view of Hunter (4,246,253).

Thackeray et al. Furukawa et al. discloses the claimed invention as explained above except for specifically teaching that the λ -manganese dioxide was prepared by contacting with water, adding an acid, separating the solid and drying at a temperature of 120 degrees C or below.

Hunter teaches in column 1, lines 1-12, and lines 45-65, that a new form of manganese dioxide having an x-ray diffraction pattern not heretofore exhibited by any previously known forms of manganese dioxide has been found. The product of an acid

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treatment of LiMn_2O_4 is substantially pure MnO_2 ($\lambda\text{-MnO}_2$) whose x-ray pattern is nearly identical to that of the starting material LiMn_2O_4 . Hunter teaches in column 2, lines 48-68, that there is a new crystalline form of manganese dioxide which encompasses acid-treating LiMn_2O_4 which is suspended in water. The treatment typically involves suspending LiMn_2O_4 in water and then adding acid while continuing to stir and while monitoring the pH of the solution phase. In order to get about 90% of the LiMn_2O_4 to the $\lambda\text{-MnO}_2$, acid treatment should continue until the pH of the solution phase stabilizes at below about 2.5, preferably below about pH of 2. Hunter teaches in columns 3-4, Example 1, that LiMn_2O_4 was placed in a beaker with water, then added the acid H_2SO_4 until the solution phase pH stabilized at 2. After allowing the solid material to settle, the remaining solid was washed. The solid was dried in an oven at about 85 degrees C.

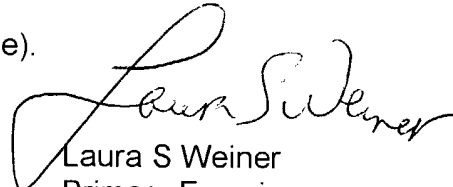
It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the method taught by Hunter to produce the $\lambda\text{-MnO}_2$ because Hunter teaches that the product of an acid treatment of LiMn_2O_4 is substantially pure MnO_2 ($\lambda\text{-MnO}_2$) whose x-ray pattern is nearly identical to that of the starting material LiMn_2O_4 .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Laura S Weiner
Primary Examiner
Art Unit 1745

December 1, 2004